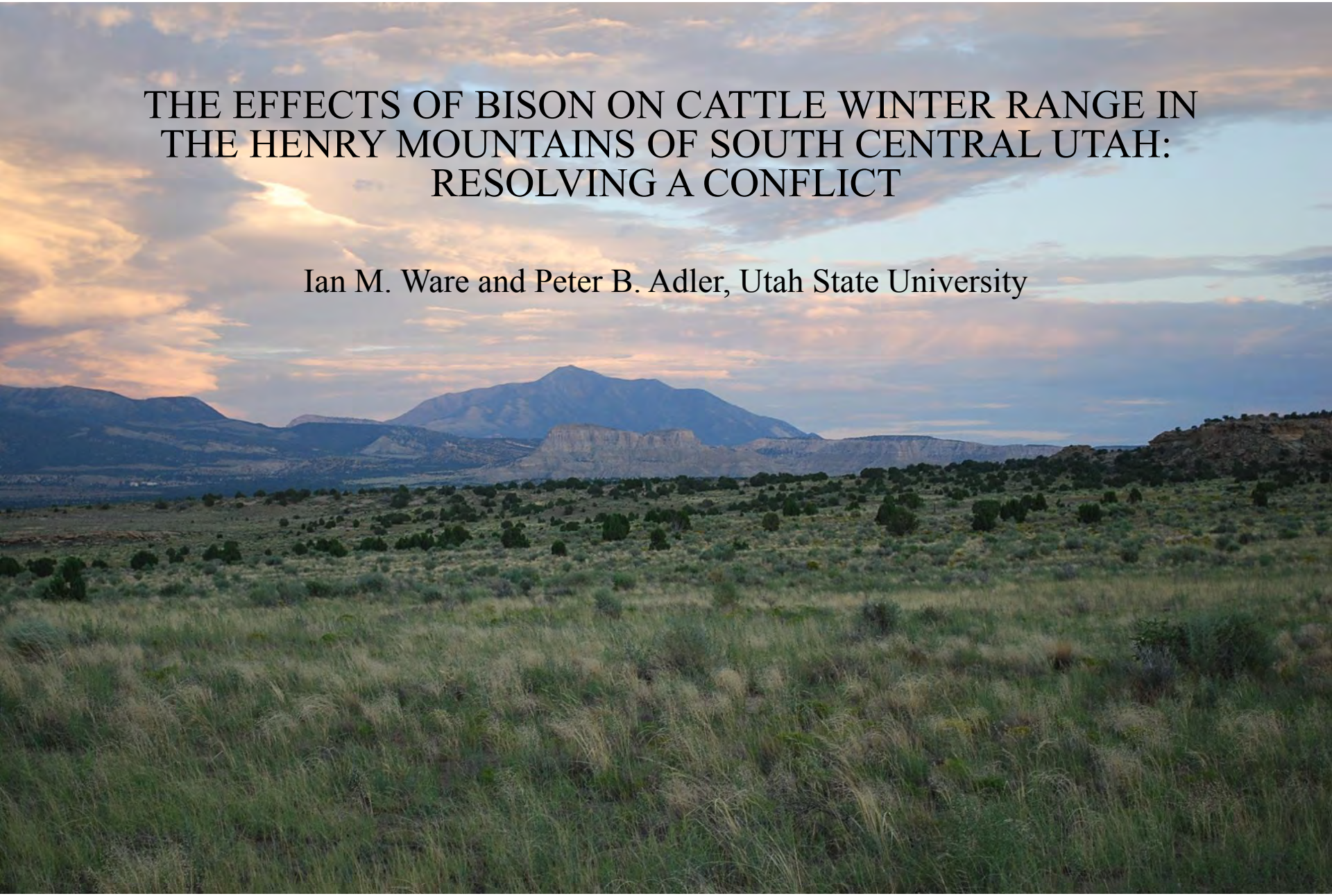


# THE EFFECTS OF BISON ON CATTLE WINTER RANGE IN THE HENRY MOUNTAINS OF SOUTH CENTRAL UTAH: RESOLVING A CONFLICT

Ian M. Ware and Peter B. Adler, Utah State University

# Background:

- Henry Mountains, Utah
- UDWR introduced 18 in 1941, 5 in 1942.
- Now ~400 in the herd
- BLM land/ Cattle Allotments


# Introduction:

- Jack H. Berryman Institute
- Conflict Resolution

- Conservation Implications
  - Colorado Plateau Ecosystem
  - Bison

- Short Term and Long Term Effects

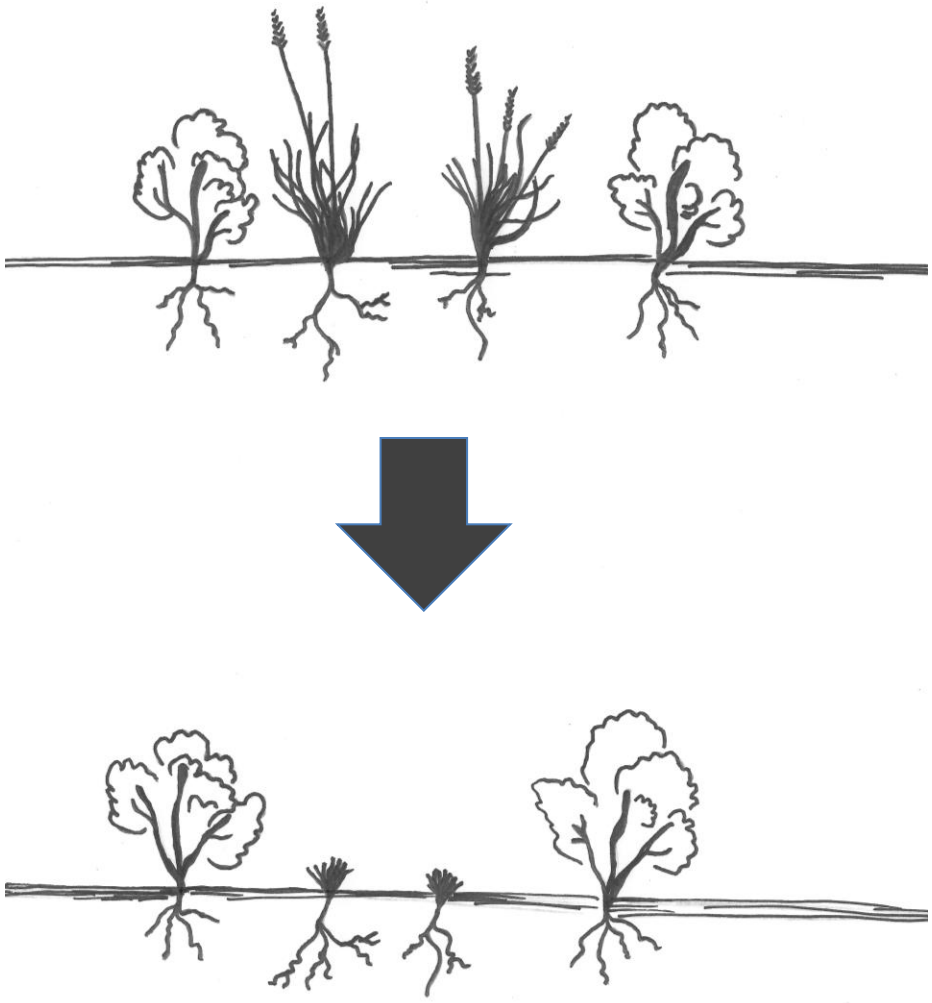
- Fernandez *et al*. 2008 Colorado Plateau comparison


# Grazing Impacts:

**Short term:**

- Increases in grazing intensity and stocking rates can reduce forage availability.

- Quick Recovery

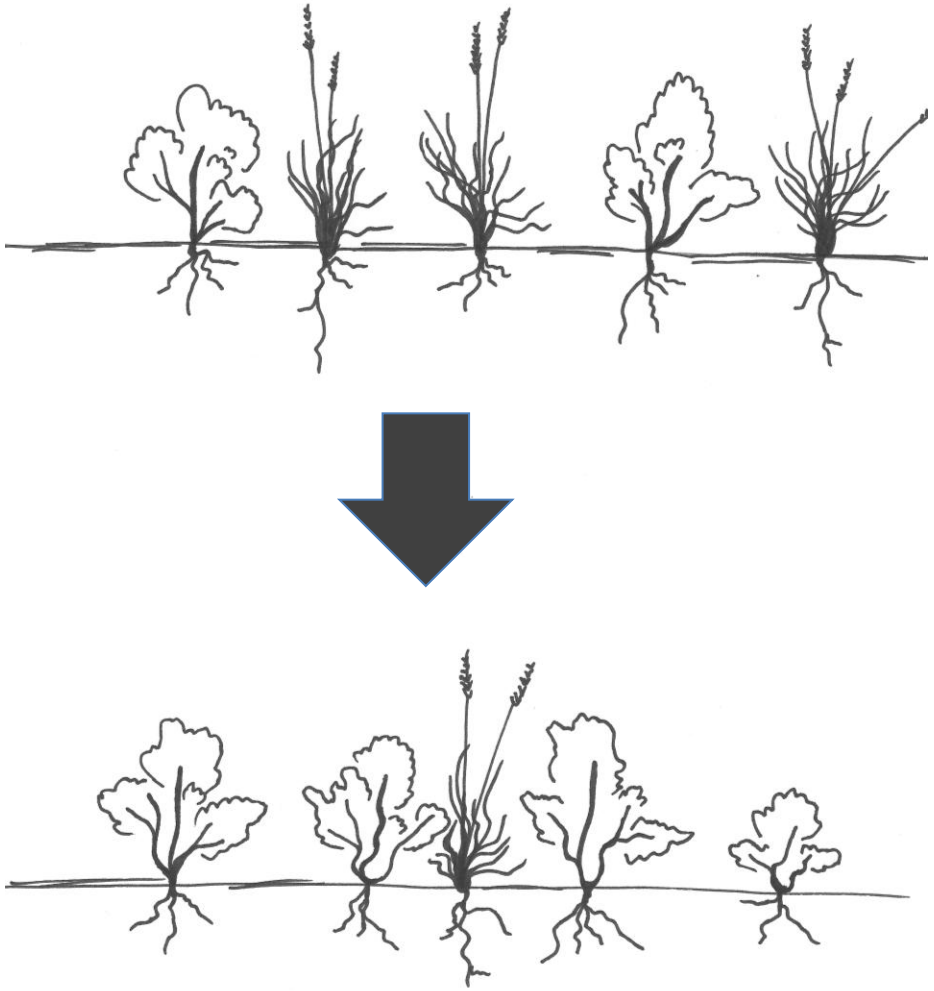


# Grazing Impacts:

**Long term:**

- Prolonged, over-grazing could lead to compositional changes in the plant community.

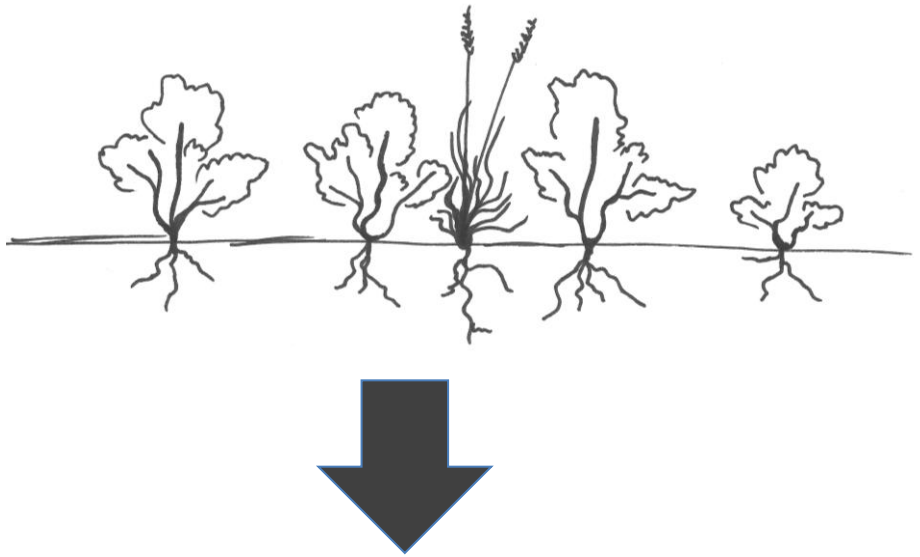
- Long Recovery



# Grazing Impacts:

**Long term:**

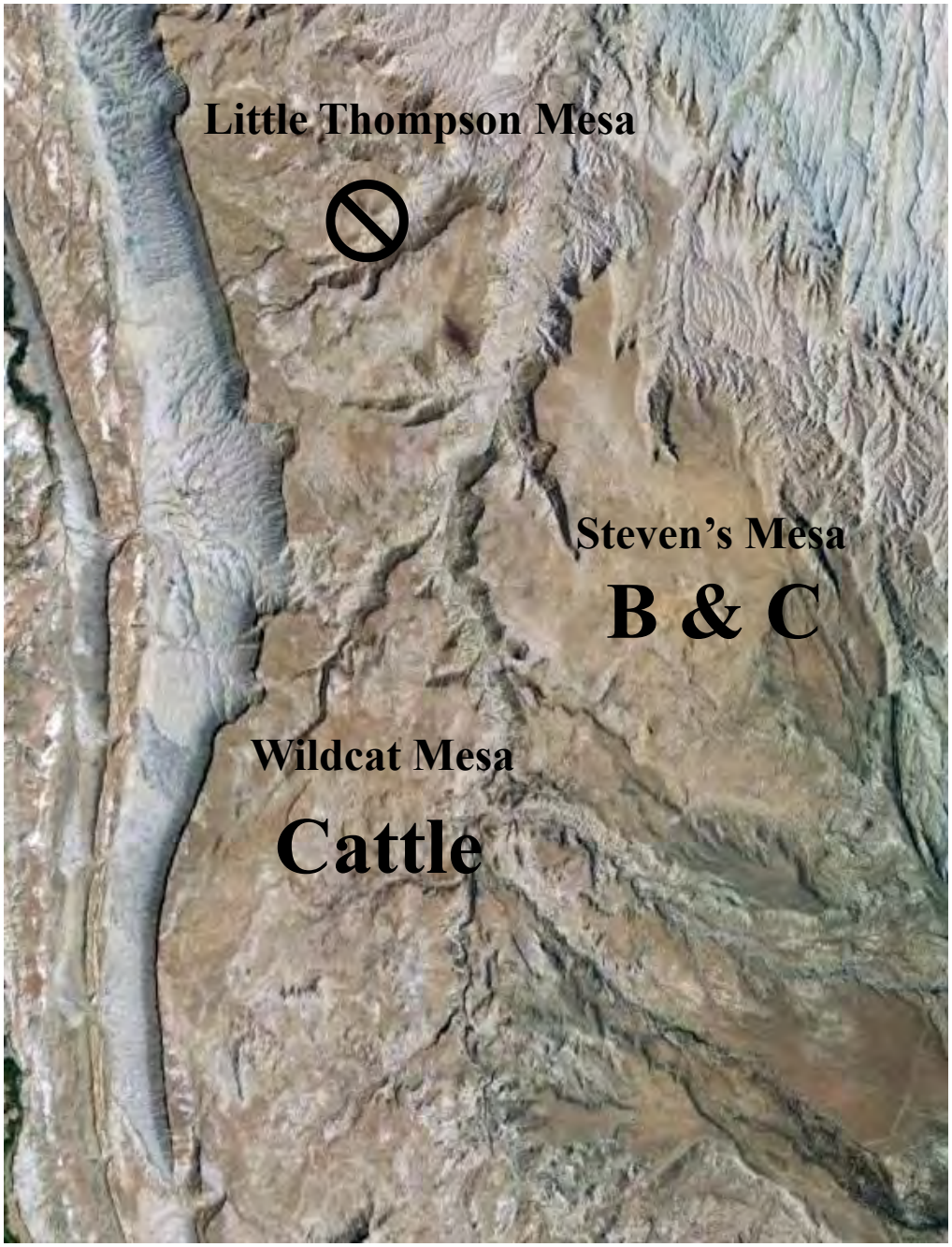
- Prolonged, over-grazing could lead to compositional changes in the plant community.



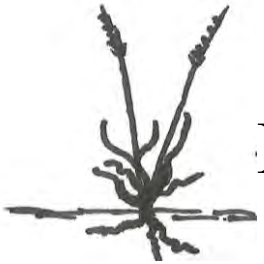
- Long Recovery

# Approach:

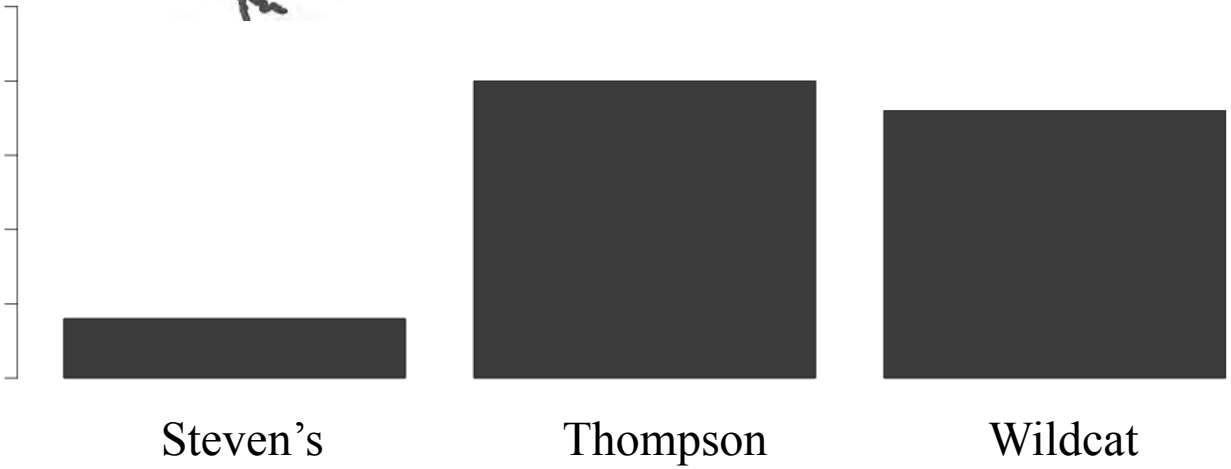
- Spatial Comparison
  - 3 Geomorphologically similar mesas
- 32 Total Sites
- Dealing with Pseudoreplication



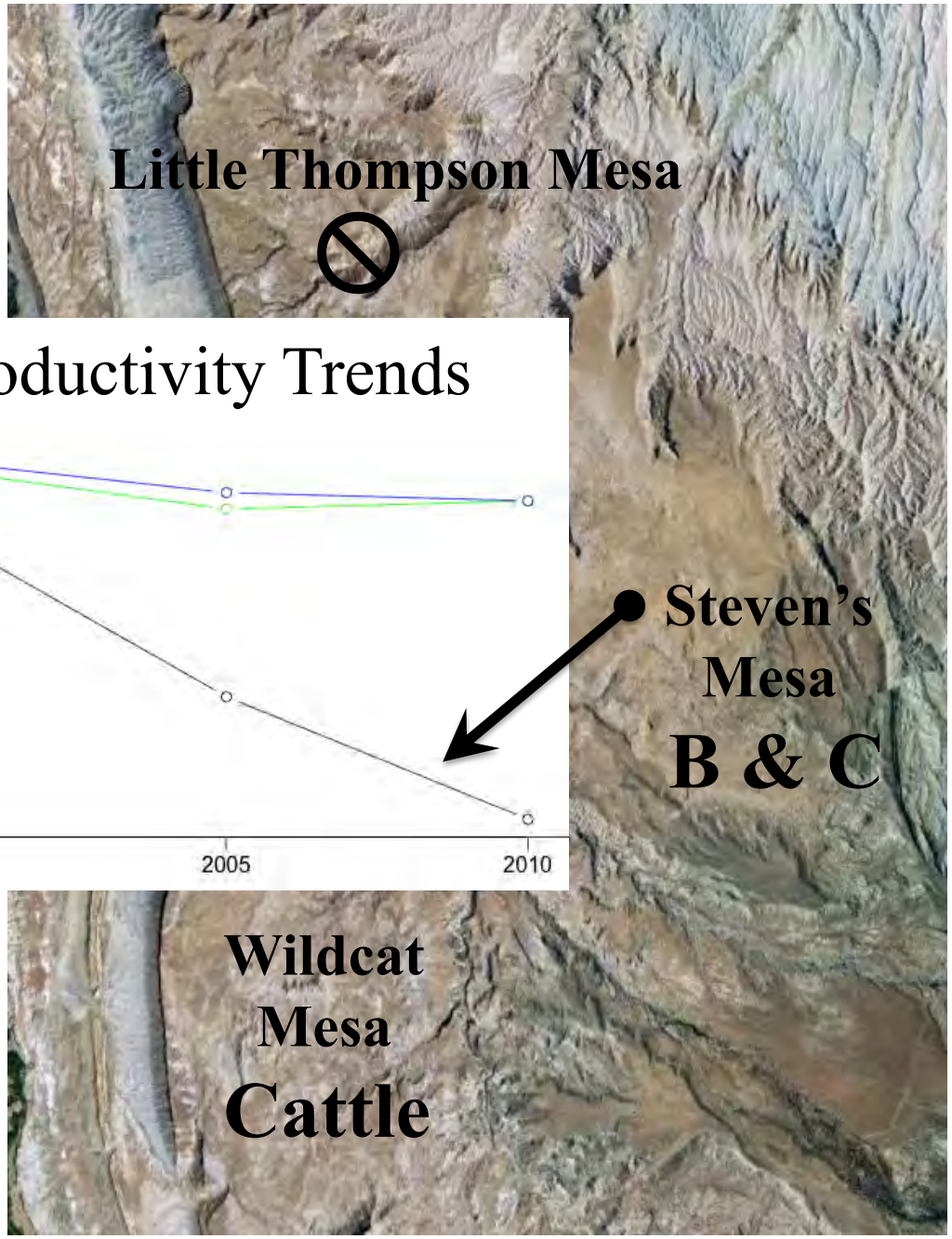
# Approach:

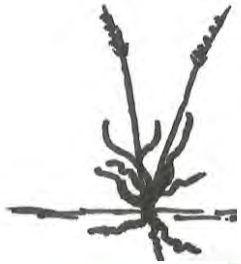


Potential Forage Spp. Cover

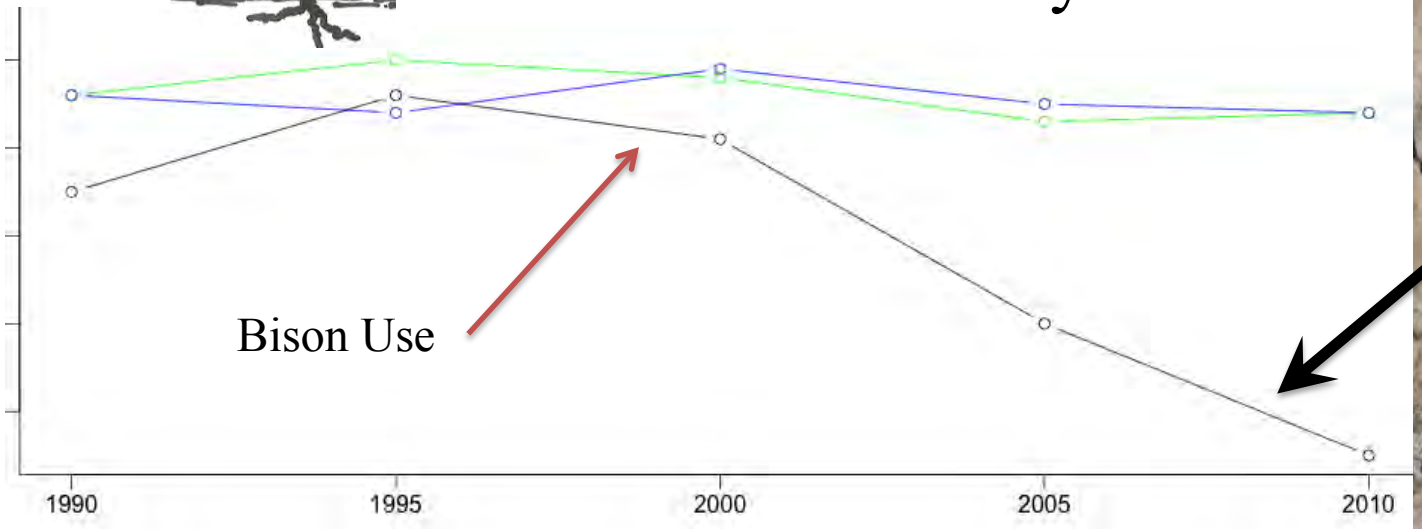



# Approach:



Potential Productivity Trends




Bison Use

# Objectives:

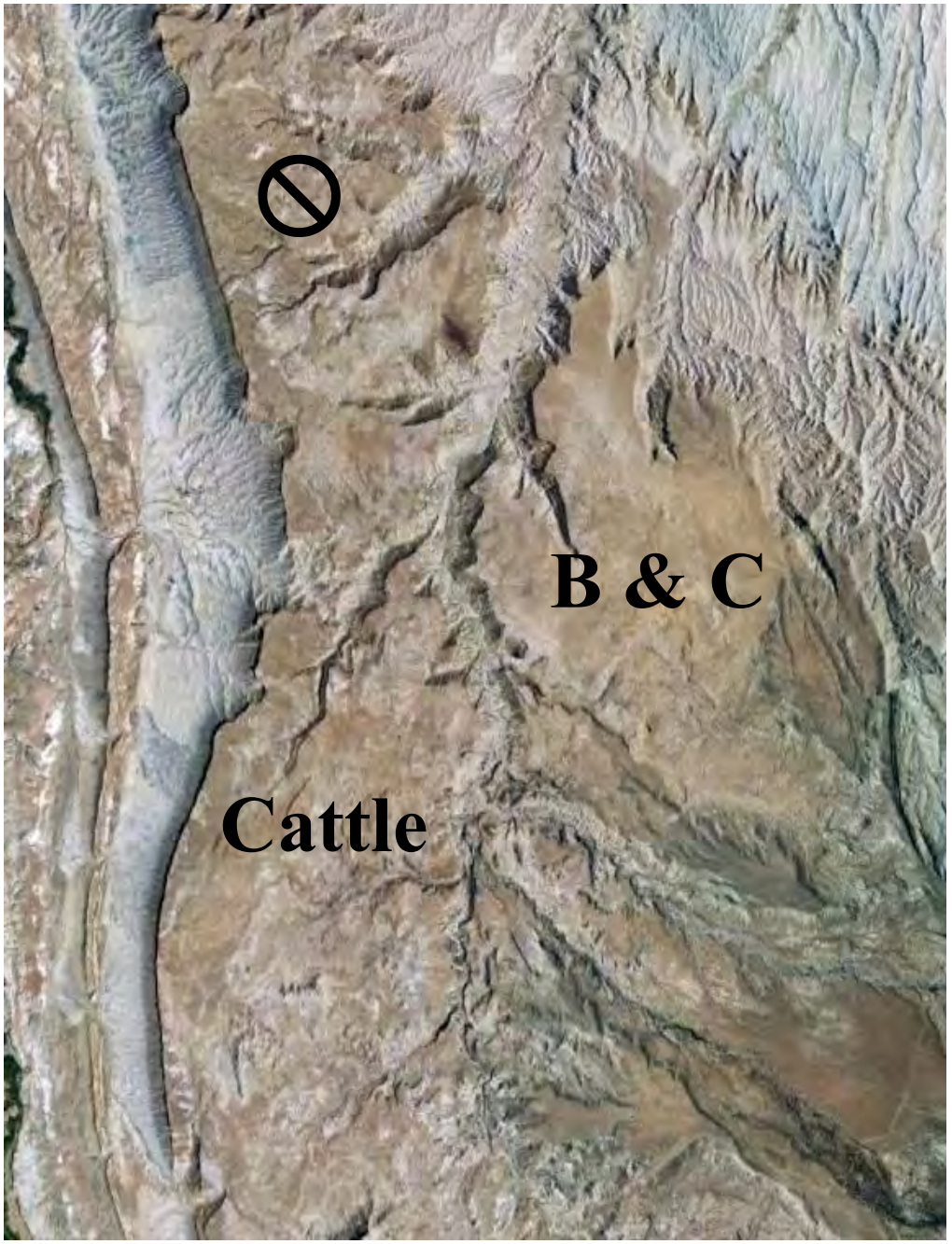
Short Term:

- Seasonality and Intensity

Long Term:

- Bison induced degradation

- Loss of productivity



# Methods Overview:

Short Term:

- Defoliation Index and Scat Counts.

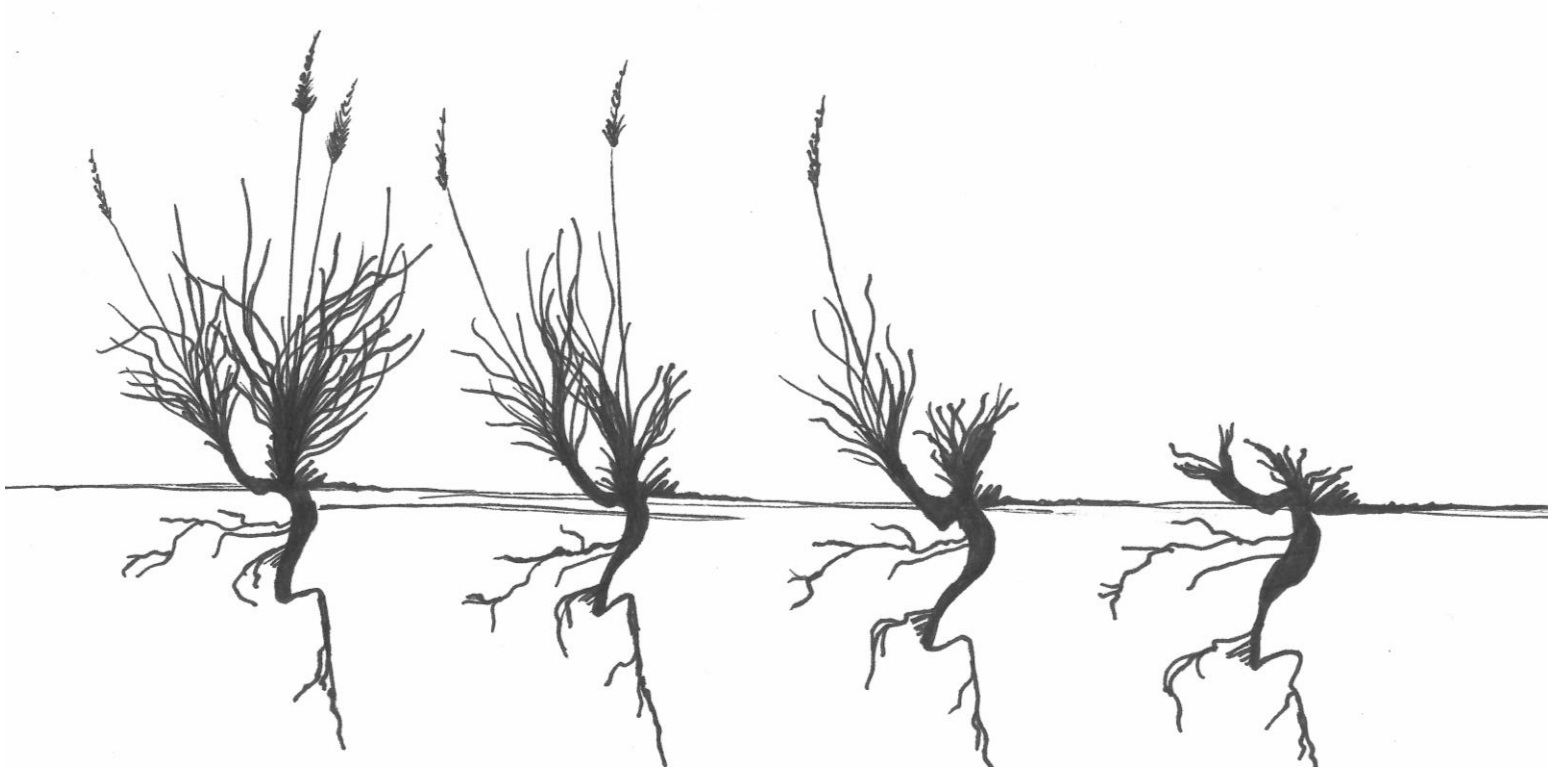
Long Term:

- Soil Parameters
- Vegetation surveys
- NDVI time series comparison.

# Defoliation Index:

Measured grazing intensity with a defoliation index on the two dominant grass species (*Pleuraphis jamesii* and *Achnatherum hymenoides)*

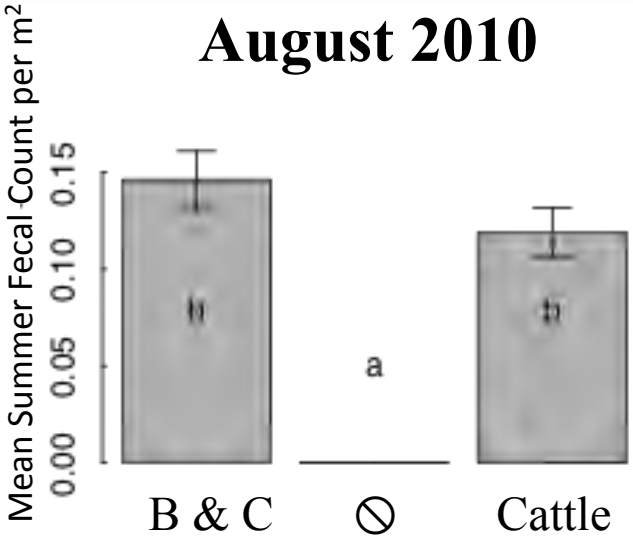
0 1 2 3



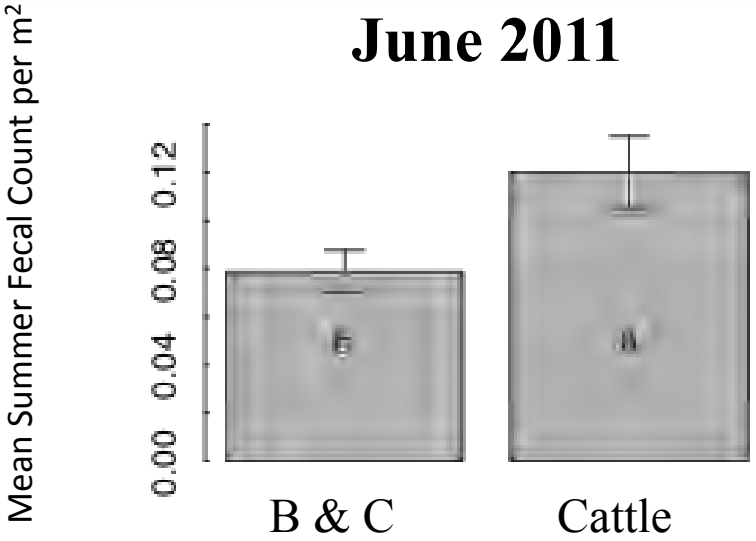
# Results:

# Fecal Pat Densities:

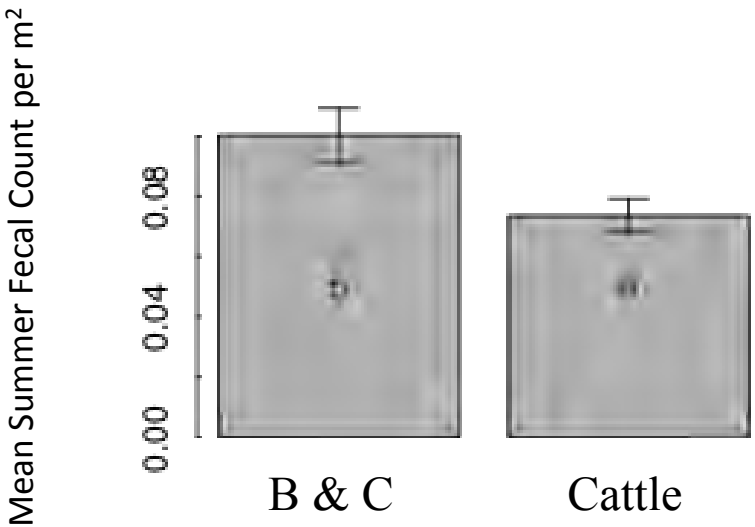
## August 2010



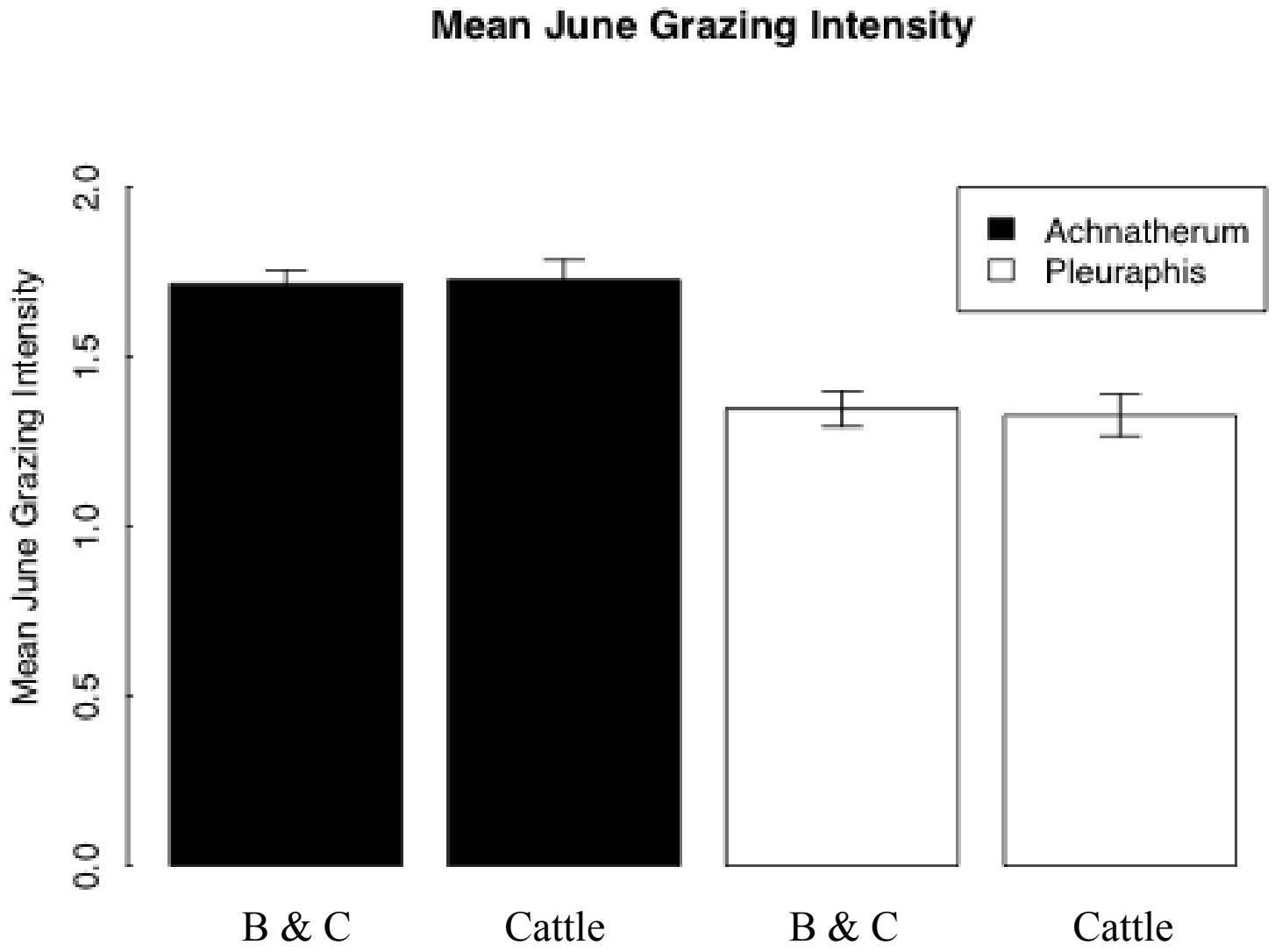

## June 2011



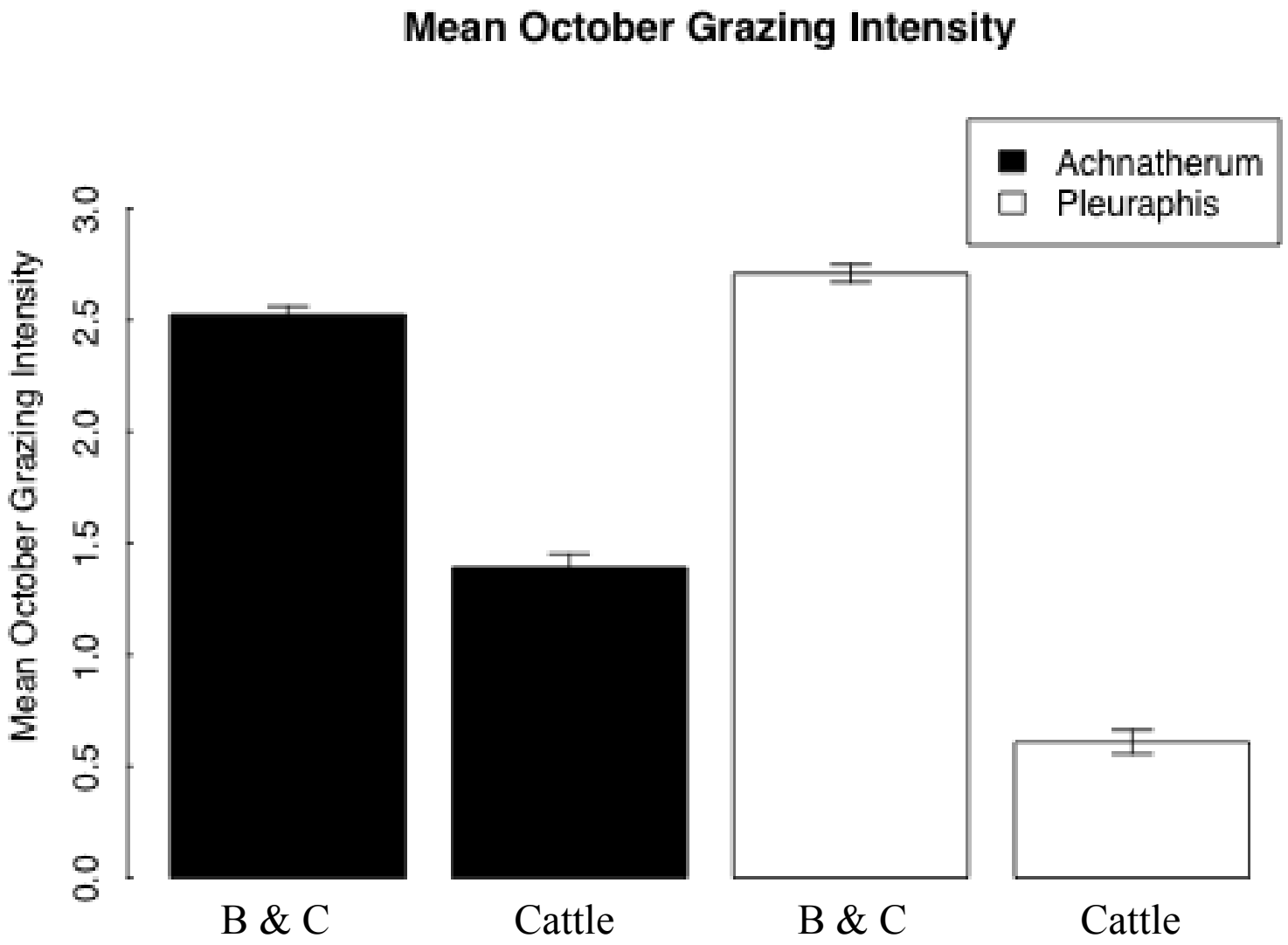

## October 2011



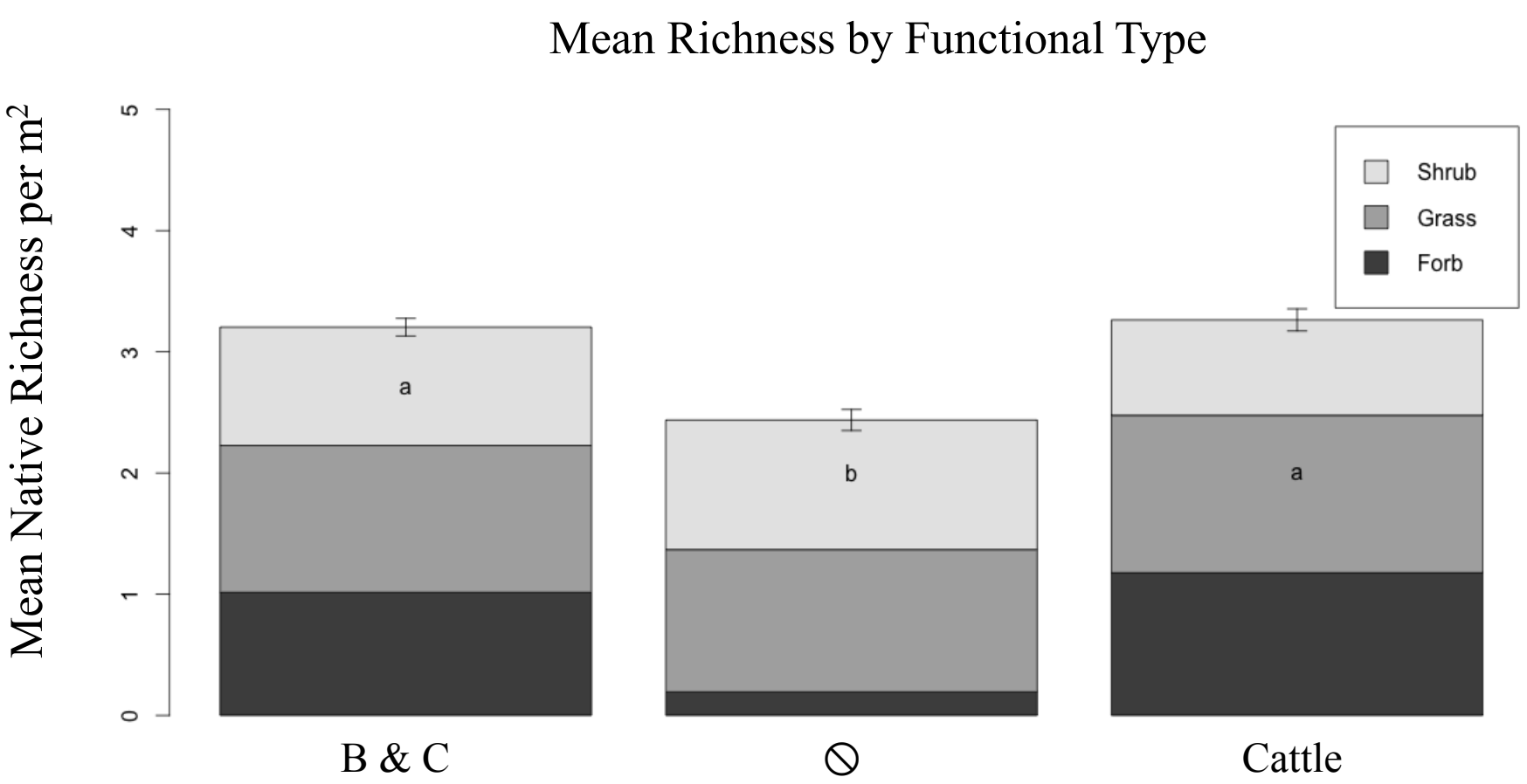
# Grazing Intensity:



# Grazing Intensity:



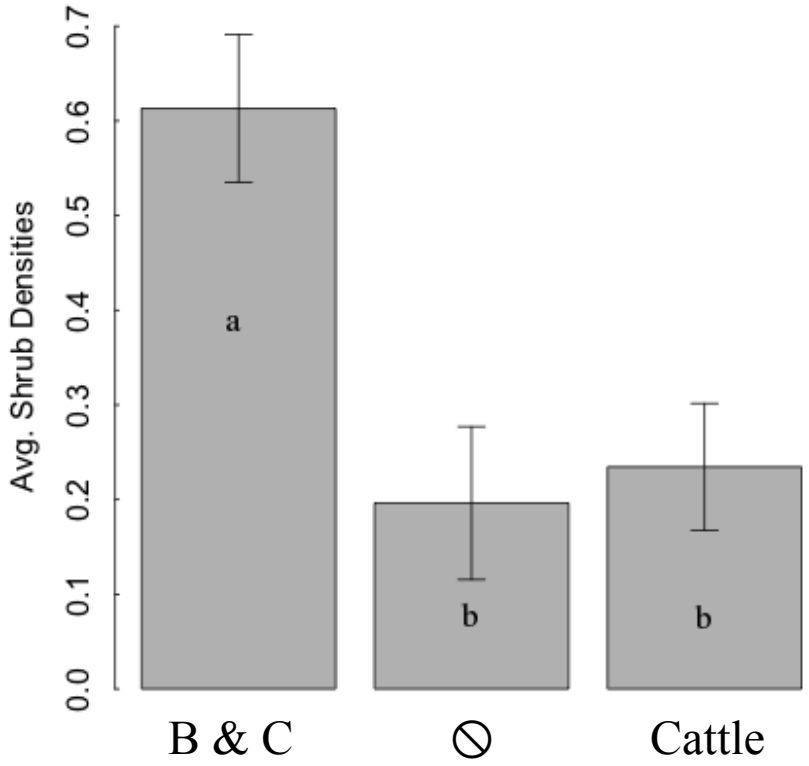
# Species Richness:



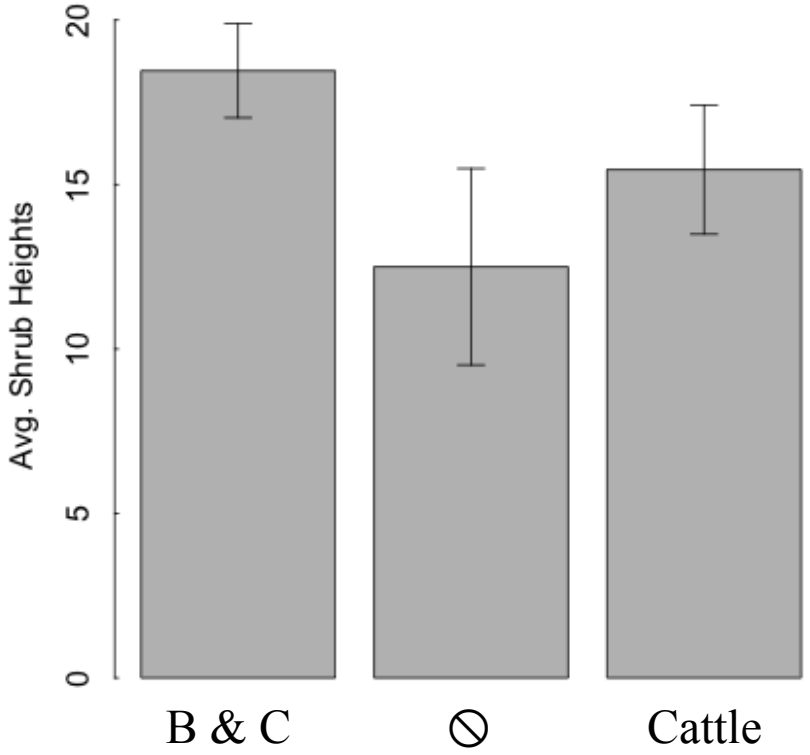
# Broom Snakeweed:

Grazing Increaser

**(A) Average Density/ $m^2$**

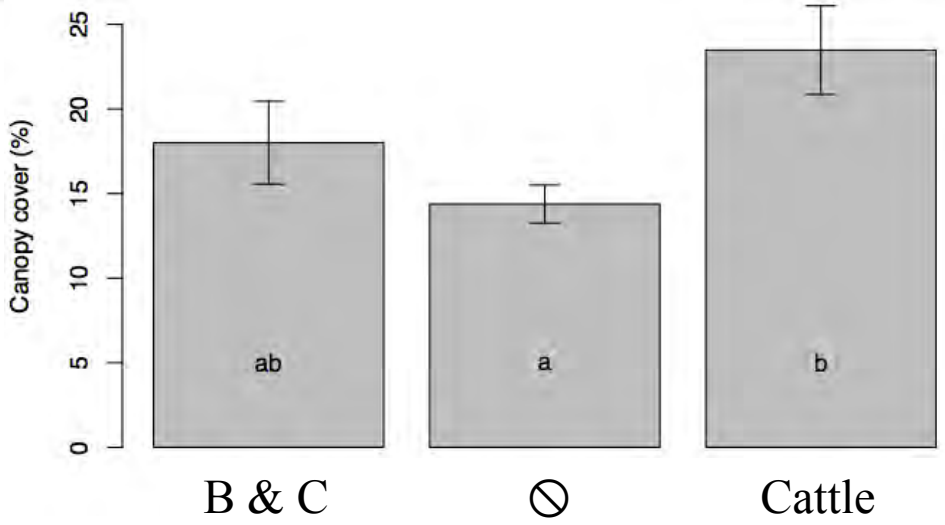



**(B) Average Height**

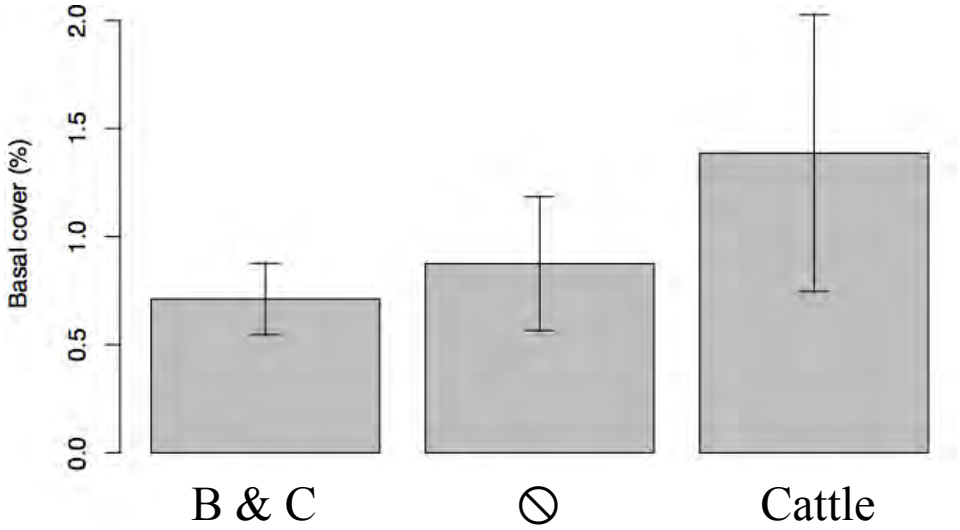


# Dominant Grasses:

**Canopy cover:**

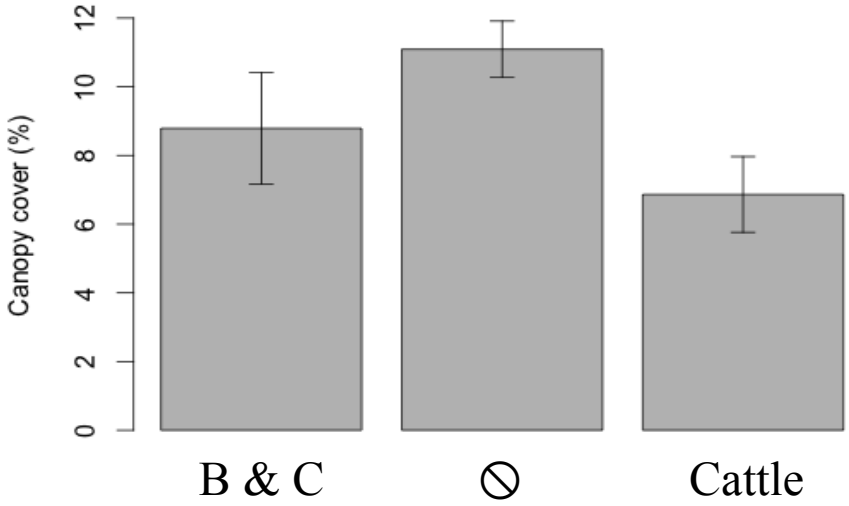



**Basal cover:**

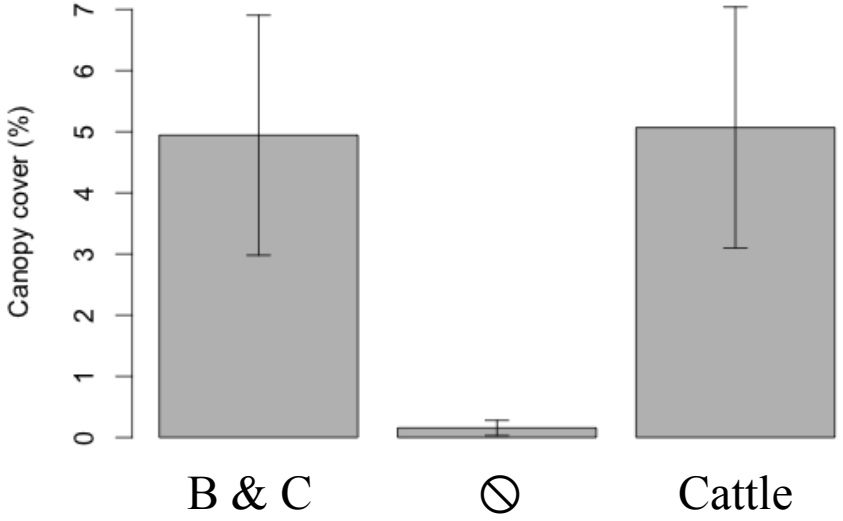


# Canopy Cover:

**Dominant Shrubs:**

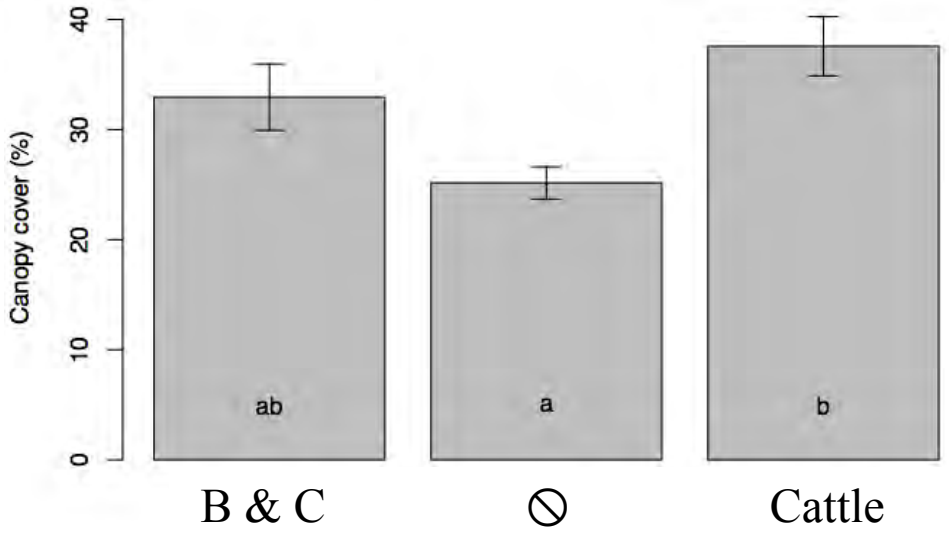



**Weeds:**

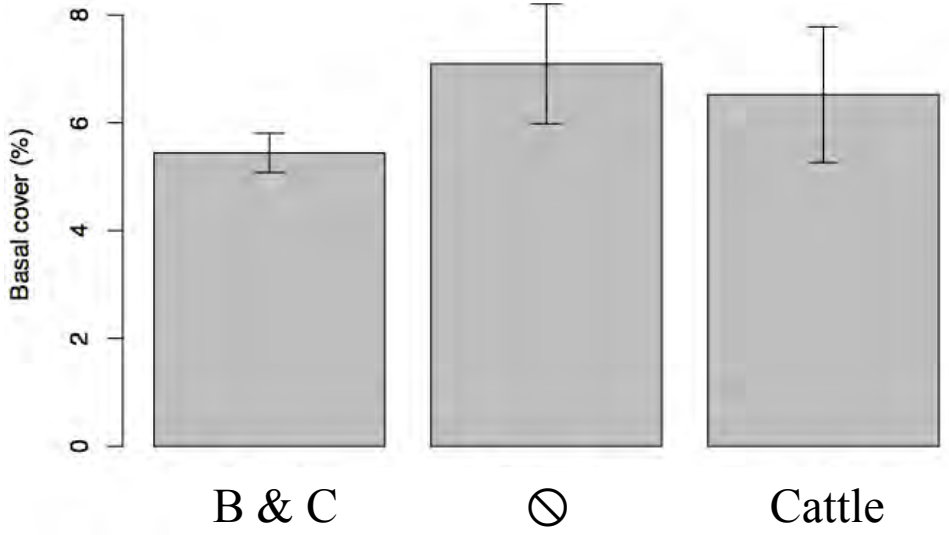


# Total Cover:

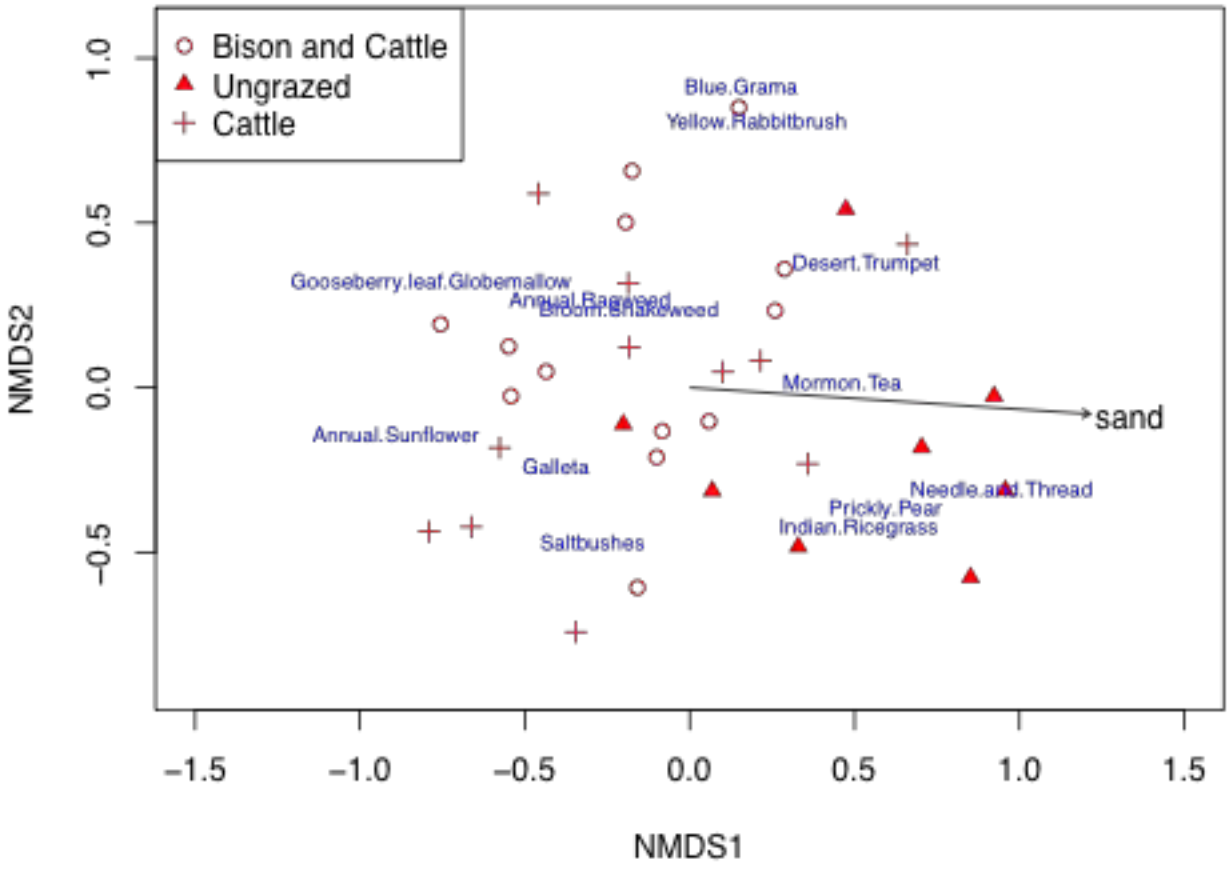
**Canopy cover:**




**Basal cover:**



# Community Composition:

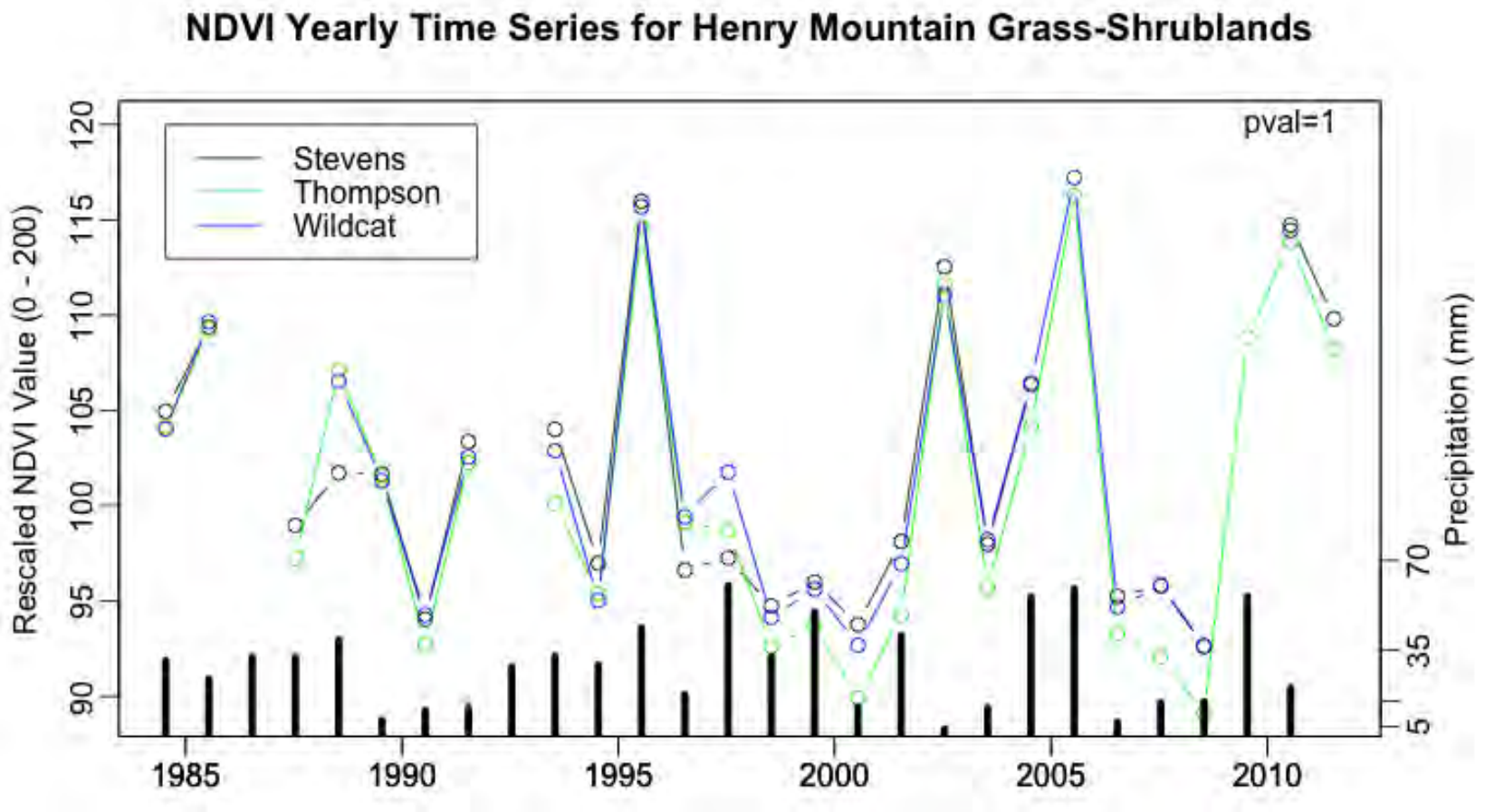



Stress =0.2050***

Sand Fraction***

**Steven's**: bison and cattle grazed **Thompson**: ungrazed **Wildcat**: cattle grazed

# Historical Reference:




**Steven's**: bison and cattle grazed **Thompson**: ungrazed **Wildcat**: cattle grazed

# Discussion:

Short Term:

- Found reductions in forage availability.
- Seasonality and intensity of bison use.

Long Term:

- Break in utilization in the late spring and early summer months.
- No clear evidence of negative long-term effects of herbivore-induced degradation

# Implications:

- Conflict Resolution
  - Bison plus cattle similar to cattle only
- Management Mission
  - Animal Distribution
- Continued monitoring of the combined effects of cattle and bison is important.

# Acknowledgments:


- Peter Adler and Lab Group
- Pat Terletzky-Gese
- Dept. of Wildland Resources
- Jack H. Berryman Institute
- USU Ecology Center




Questions?